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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,219	06/08/2007	Jean Armioli	DKT03189	7653
67424 7590 10/06/2010 REISING, ETHINGTON, BARNES, KISSELLE, P.C. P. O. BOX 4390 TROY, MI 48099-4390				
EXAMINER TIETZEN, MARINA ANNETTE				
ART UNIT		PAPER NUMBER		
3753				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/583,219

**Applicant(s)**

ARMIROLI ET AL.

**Examiner**

MARINA TIETJEN

**Art Unit**

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 30 June 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 17, 18, 20-28, 30, 31 and 33-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 17, 18, 20-28, 30, 31 and 33-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Response to Arguments***

1. Applicant's arguments with respect to claims 17, 18, 20-28, 30, 31, 33-40 have been considered but are moot in view of the new ground(s) of rejection. The new grounds of rejection were not necessitated by the amendments, and therefore the instant office action has been made non-final.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 17, 18, 20-28, 30, 31, 33-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hass (U.S. Pat. No. 1,331,707) in view of Rado (U.S. Pub. No. 2004/0074985).

Haas disclose a valve (fig. 2) comprising:

a valve body (1, 3) defining an inlet (16), an outlet (11), and a seat (7) a first port (30);

a first valve member (42, 43, 44, 25) moveable between a first valve member closed position (against seat 7) and a first valve member open position (away from seat 7), wherein at least a portion (42) of the first valve member is in contact with the seat (7) when the first valve member is in the first valve member closed position, and the at least a portion (42) of the first valve member is spaced a predetermined distance from the seat (7) when the first valve member is in the first valve member open position;

an actuator (41, 39), wherein at least a portion (41) of the actuator (41, 39) is moveable relative to the valve body (1, 3);

wherein the first valve member (42, 43, 44, 25) is further defined by an axial cavity (within 60) in fluid communication with the inlet (16), the valve body (1, 3) is further defined by a low pressure chamber portion (10, 33) and a high pressure chamber portion (15, 29), the high pressure chamber (15, 29) being formed in part by the axial cavity (within 60), the first valve member (42, 43, 44, 25), when in the first valve member closed position, defines a first boundary between the low pressure chamber (10, 33) and the high pressure chamber (15, 29), and wherein the low pressure chamber (10, 33) is in fluid communication with the high pressure chamber

(15, 29) when the first valve member (42, 43, 44, 25) is in the first valve member open position;

a second valve member/needle (38) coupled to the actuator (41, 39) and being movable between a open position and a closed position, wherein at least a portion of the second valve member/needle (38) is in contact with at least a portion of the first port (30) when the second valve member/needle (38) is in the closed position, thereby defining a second boundary between the low pressure chamber (10, 33) and the high pressure chamber (15, 29);

a restriction part (22) located in the high pressure chamber (15, 29) and having a restriction passageway (24) which allows the passage of fluid from one side of the restriction part to another side of the restriction part, both sides of the restriction passageway being located in the high pressure chamber (15, 29), wherein the restriction part (22) remains stationary as the first valve member(42, 43, 44, 25) moves from the closed position to the open position;

wherein at least a portion of the first valve member is moveable generally parallel to an axis of the actuator (41, 39);

wherein the second valve member/needle (38) is coupled generally coaxially to a central portion of the actuator (41, 39);

wherein the restriction passageway (24) provides a restricted flow area that is less than a first port (30) flow area when the second valve member/needle is in the first needle open position;

wherein the second valve member/needle (38) includes a body portion (top part which end of spring 40 is against and which abuts against 41) and a needle portion (lower part extending to 38); and the body portion is positioned within the low pressure chamber (10, 33);

further comprising a spring (40) exerting a biasing force to bias the second valve member/needle (38) toward the closed position;

wherein at least a portion (25) of the first valve member defines a portion of the high pressure chamber (15, 29);

wherein the valve body (1, 3) further defines a first valve member abutment (32), and wherein at least a portion of the first valve member contacts at least a portion (44) of the first valve member abutment when the first valve member is in the open position;

wherein the first valve member (42, 43, 44, 25) is further defined by a passageway (between flange 62 and wall 19) connecting the cavity (passage of 22 within 60) in fluid communication with the inlet (16);

wherein the first valve member (42, 43, 44, 25) is coupled (via body portion 3) to the actuator (41, 39) for moving the first valve member between the open position and the closed position;

wherein the restriction part (22) is separate and distinct from the first valve member (42, 43, 44, 25);

wherein the first valve member (42, 43, 44, 25) moves from the closed position to the open position without the assistance of a spring.

However, Haas does not disclose the actuator is a piezoelectric portion, and wherein the piezoelectric portion is a disc having a first surface, wherein the first surface has a concavity directed towards the second valve member/needle when the voltage is about zero, and wherein at least a portion of the first surface is selectively deformed when a voltage is applied as the first valve member moves relative to the valve body.

Rado teaches a valve needle actuator (20b), wherein the actuator is a piezoelectric portion (50, fig. 2) wherein the piezoelectric portion (50) is a disc (para. 0026) having a surface with a concavity directed towards the valve needle when the voltage is about zero, and wherein at least a portion of the first surface is selectively deformed by applying a voltage as the first valve member (70) moves relative to the valve body (22b), for the purpose of automating actuation of a needle actuator which is simple, inexpensive, and accurate (para. 008).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Haas' valve such that the actuator is a piezoelectric portion, and wherein the piezoelectric portion is a disc having a first surface, and wherein at least a portion of the first surface is selectively deformed when a voltage is applied as the first valve member moves relative to the valve body, as taught by Rado, for the purpose of automating actuation of a needle actuator which is simple, inexpensive, and accurate.

***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Pat. Nos. 1,646,640 (Daniel), 1,925,301 (Campbell), 3,903,919 (Zeuner), 4,570,849 (Klaucke et al.), 4,777,921 (Miyaki et al.), 5,542,384 (Rosenmann et al.), 5,564,673 (Pieren), and 6,021,996 (Nakayoshi) disclose similar valves including a first and second valve members with a restriction in between to create a first and second boundary between a high and low pressure chamber.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARINA TIETJEN whose telephone number is (571) 270-5422. The examiner can normally be reached on Mon-Thurs, 9:30AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN HEPPERLE can be reached on (571) 272-4913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. T./  
Examiner, Art Unit 3753

/John K. Fristoe Jr./  
Primary Examiner, Art Unit 3753